
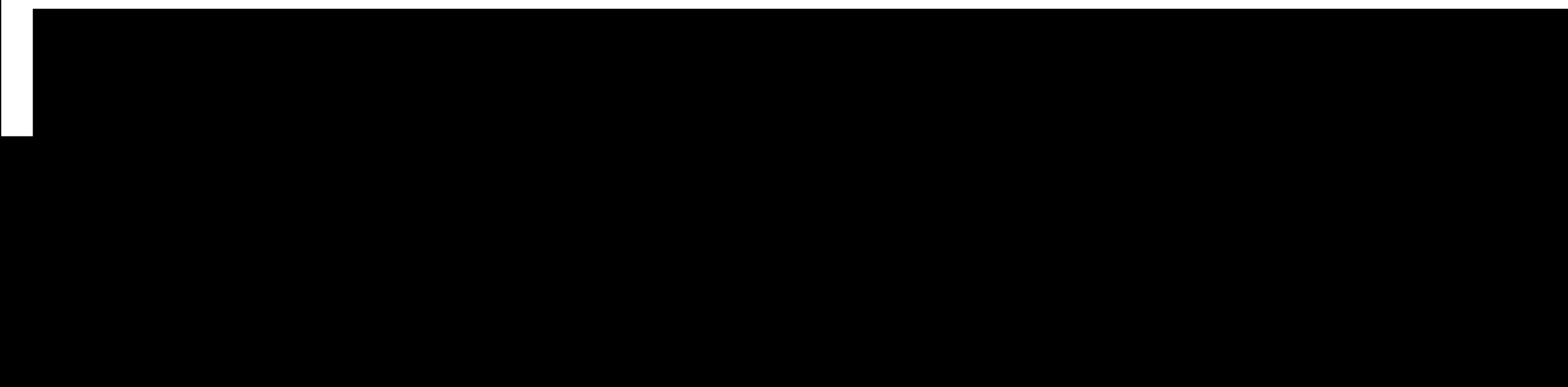

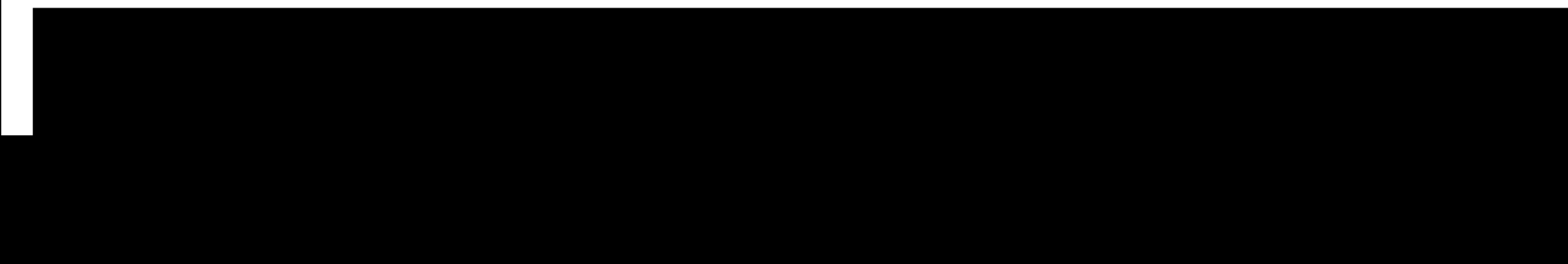


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DIRECTORATE OF  
INTELLIGENCE

# Intelligence Memorandum

*Ceylon's Rice Self-Sufficiency Program*

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CENTRAL INTELLIGENCE AGENCY  
Directorate of Intelligence  
August 1970

### INTELLIGENCE MEMORANDUM

#### Ceylon's Rice Self-Sufficiency Program

##### Introduction

Soon after her election in the spring of 1970, Prime Minister Bandaranaike of Ceylon disclosed her intention to continue the policy of giving priority to the expansion of food production. As a result of measures taken by previous governments, rice production had grown rapidly and Ceylon's dependence on rice imports had fallen sharply -- from about three-fifths of the total rice available in the early 1950s to about one-fifth in 1969.

This memorandum evaluates Ceylon's progress toward self-sufficiency in rice and the policies that have been responsible for that progress. It also assesses the outlook for Ceylon's rice production through the mid-1970s in the perspective of the new government's declared policy intentions.

##### Progress Toward Self-Sufficiency

1. Since independence in 1948, successive governments in Ceylon have encouraged rice production as an integral part of their development efforts. Rice is by far Ceylon's most important

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food crop and is the staple food of the Ceylonese diet. At independence, however, almost three-fourths of the rice consumed was imported. Domestic production was inhibited by a primitive technology and the fact that it was more profitable for farmers to work on rubber or tea plantations than to grow rice for the market. Since independence, a rapidly growing population and lack of dynamism in the world rubber and tea markets have provided a strong economic incentive for developing rice production.

2. The continuing government support of the island's rice economy has been accompanied by a rapid growth in rice production. Production increased at an average annual rate of 6% during 1952-69, while population growth averaged about 2%. Thus the per capita availability from domestic sources increased sharply, and dependence on rice imports declined to about 20% in 1969.

3. This relatively rapid growth in rice production -- about twice the rate experienced by all rice-growing countries combined -- reflects both an increase in the area under cultivation and an increase in yields. Total rice acreage increased from about 0.8 million acres in 1951 to 1.4 million acres in 1969. At the same time, yields per acre increased from about 1,200 pounds to 2,200 pounds (see Table 1). The growth of both production and yields was especially rapid during 1967-69, and preliminary estimates for the 1970 crop indicate that this rapid growth will be sustained.

**Government Policies**

4. Ceylonese government actions that have influenced the growth of rice production include (a) expansion of irrigated areas, (b) land re-settlement programs, (c) an agricultural extension service, and (d) a government price-support program. In addition, the government played a major role in developing and disseminating improved seed varieties that were largely responsible for the recent sharp rise in yields per acre.

5. As a result of the government's programs, the total paddy area has increased by about 3% a year since 1951. The irrigated area grew faster, however, and the proportion of the crop under irrigation increased from 45% in the early 1950s

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to 60% in 1967 (see Table 2). The government expanded the irrigated area by concentrating for the most part on improving and adding small irrigation works in the wet zone -- the southwest quarter of the island which has two monsoons and accounts for three-fourths of total rice production (see the map). Reservoirs in this area are smaller and less expensive than in the dry zone because of the second monsoon. The government also expanded the paddy area in the dry zone -- where there is only one monsoon and reservoirs must be larger -- by constructing larger irrigation works.

6. The expansion in irrigation was accompanied by a land resettlement program that increased the average size of paddy holdings and thereby enhanced farmers' ability to invest in the land. The government administers resettlement programs to redistribute land in the heavily populated wet zone and to colonize newly irrigated land in the dry zone. The new settlers receive considerable government assistance for the construction of houses, wells, and roads as well as for planting materials and agricultural loans. Between 1946 and 1962 the average size of paddy holdings increased and the area in holdings of less than 1 acre declined dramatically. In 1962, almost 60% of the rice area consisted of holdings of more than 5 acres, compared with 30% in 1946 (see Table 3). This proportion most likely has increased even further since 1962 as resettlement has continued.

7. The government also spread modern agricultural techniques through an extensive agricultural extension service. Cultivation practices at the time of independence were extremely primitive; practically the only countries with lower average yields than Ceylon were India, Pakistan, and the Philippines. In 1954 the service was reorganized and an ambitious program was launched to bring about a full-scale conversion to Japanese cultivation practices. Emphasis was placed on selecting good seeds, transplanting in wide-spaced rows, better preparation of the land, and other rather simple procedures, all of which could lead to a doubling of yields. However, the Japanese system requires more labor than was available in many areas, and its use has remained limited.

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8. Improved seed varieties also made a significant contribution, particularly after 1964. Ceylon's research on paddy has yielded a large number of high-yielding hybrid seeds. In 1964, less than 10% of the rice area was sown with improved seeds, but by 1968 this had increased to 75%. The most commonly used improved seeds in the wet zone are H-4 and its progeny -- a cross between Ceylonese and Indonesian varieties -- which was first released to farmers in 1958. Ceylonese researchers believe that under normal conditions yields of about 3,500 pounds per acre -- about 60% higher than average yields now obtaining -- can be expected from H-4 when certain recommended amounts of fertilizer are applied. Yields can be economically increased further to about 4,000 to 4,500 pounds per acre by applying even more fertilizer. IRRI strains, originally developed in the Philippines, also have been tested for use in the dry zone and are showing very favorable results. Thus the potential for the new seeds is high, but there is still a considerable gap between optimal practices and those actually used.

9. Use of fertilizer has increased under a government subsidy program, but the average application rate in 1968 was still far below the recommended levels for achieving the potential of the high-yielding seeds. The recommended amount of fertilizer for an acre seeded with H-4 is 45 pounds of nitrogen (N), 35 pounds of phosphoric acid ( $P_2O_5$ ), and 28 pounds of potash ( $K_2O$ ). Actual fertilizer application rates and average yields during 1965-68 were as follows:

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Year	Pounds. per Acre			Average Yields
	N	P <sub>2</sub> O <sub>5</sub>	K <sub>2</sub> O	
1965	11.5	5.7	4.7	1,582
1966	12.4	5.3	6.2	1,638
1967	18.9	7.5	10.0	1,904
1968	24.1	4.3	6.2	2,042

10. The various governmental programs were re-inforced by its Guaranteed Purchasing Scheme (GPS). The scheme became effective in 1952 when a guaranteed purchasing price of 0.26 rupee per pound was introduced, which until the mid-1960s amounted to almost double the cost of rice imports. Moreover, it was more than double the price charged consumers under the rice ration program.\* The farmer quickly realized the advantage of selling most of his crop at high support prices and purchasing what he could at lower ration prices, holding back only enough to meet his own consumption requirements that could not be filled under ration. By the early 1960s, almost 60% of the rice crop was purchased by the government under GPS. Although the program was poorly administered, suffered from numerous frauds and abuses, and entailed high costs to the government for purchasing and distributing rice and for subsidies, it was highly successful in shifting the traditional peasant cultivator from producing primarily for his own consumption to a market orientation.

11. In 1966 the government's policies were modified to raise rice prices and increase producer subsidies. Subsidies reduced the cost of fertilizer and seeds to the farmers by nearly 50%. Moreover, fertilizer imports were liberalized. Market prices

\* Until 1966, the ration system, which has existed since World War II, provided each Ceylonese four pounds of rice a week -- about four-fifths of consumption -- at the highly subsidized price of 0.12 rupee per pound.

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for rice increased when the government cut the rice ration program in half. The ration cut sent consumers to the open market where free market prices increased to a level higher than the government procurement price. Government procurements dropped by more than 50%. The government then raised its procurements price by 20% -- the first increase since 1952 -- to obtain the grain necessary to maintain even the abbreviated ration program.

12. The government price support program constitutes a substantial subsidy for rice farmers, but the extent of the subsidy has declined sharply in recent years. The support price for rice, which was twice the world price during the 1950s, was still 50% higher in 1966 but less than 20% higher in 1969 -- \$169 per ton compared with an import price of \$143 per ton.\* The excess cost to the government -- as measured by the differential between the procurement price and the import price applied to tonnage procured under the government program -- amounted to about 70 million rupees, only about 3% of total current budgetary expenditures. The government was willing to pay this extra cost because of the foreign exchange savings realized on the reduction in rice imports. If imports had remained at the 1966 level, the cost would have been about \$70 million in 1969, compared with actual costs of \$44 million.

13. The availability of foreign exchange has been crucial to Ceylon's economic progress, and it is unlikely that a similar savings of foreign exchange could have been realized in alternative subsidies of either import substitution or export promotion activities. Food is the island's principal import, representing about one-half of total imports, and rice is a significant portion of imported food. The successful promotion of traditional exports is precluded by the relatively poor world market for Ceylon's principal exports -- tea and rubber. The development of industry would not necessarily decrease the demand for imports, because of the dependence on foreign sources for raw materials and capital equipment. Thus the government's subsidy of rice production probably was

\* For comparability with the price of imported milled rice, the support price for paddy is adjusted upward to reflect milling losses.

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economically sound.

14. Whereas the producer subsidy has been declining, the cost to the government of its rice ration program for consumers has been increasing. Total budgetary expenditures for rice subsidies increased from 450 million rupees in 1966 to more than 560 million rupees in 1969, amounting to about one-fourth of current budgetary expenditures. At the same time, the consumer's share of this subsidy increased sharply -- from 67% to 88% -- as the producer subsidy declined. Since 1966, consumers have received two pounds of rice per week free; previously they had received four pounds at a highly subsidized price. The higher government expenditures reflected both a rising population and a rising import price for rice. The consumer subsidy, unlike the producer subsidy, is not justifiable on economic grounds but instead is in line with the government's social welfare goals of a more equitable distribution of income.

#### Outlook

15. Ceylon could well become self-sufficient in rice at current consumption levels by the mid-1970s. For production to approximately equal consumption in the mid-1970s, an average annual increase of 8% to 9% in production is necessary. Ceylon plans to achieve about that rate during 1970-76 by expanding the area in paddy by 2.4% and increasing average yields 6.2% annually. The area expansion is in line with achievements over the past 20 years and should present no problems. A 6.2% annual increase in yields will be more difficult to achieve, however -- it would mean that by 1976 average yields would be over 3,300 pounds per acre. Yields of this magnitude are equivalent to those now achieved in Taiwan and about two-thirds those now achieved in Japan.

16. Irrigation, which is the restricting factor in rice production in many South Asian countries, is not a major problem in Ceylon, but irrigation practices can be improved. Ceylon has not made full use of its expanded irrigation because of wasteful water practices. Much more water than necessary is used on the *maha* crop (the larger winter crop) and often insufficient water remains in the reservoirs to irrigate the *yala* crop (the smaller summer crop). Although the irrigated area had increased 160% between 1951 and 1967, only 60% of the irrigated

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area was double cropped in 1967, largely because of wasteful irrigation practices. In addition to improved water use, prospects are excellent for the irrigated area to be greatly increased by a new irrigation project. Construction is beginning on the massive Mahaveli Ganga irrigation project sponsored by the World Bank, which, when completed, will irrigate 900,000 acres in the dry zone. The project is to be built in three stages over 30 years with the first stage (costing about \$50 million, of which about three-fifths is financed by foreign aid) scheduled to provide irrigation to 328,000 acres by the mid-1970s. When completed, the project will increase the island's irrigated area by about 50%, and most of the expansion will bring uncultivated land under the plow.

17. Rice self-sufficiency most likely can be achieved so long as the present government continues its predecessor's policies of support to the rice farmers. Success will depend on whether enough farmers can be enabled and persuaded to use sufficient modern inputs and practices to raise average yields to the necessary level. The government program has all the necessary elements -- price supports, modern inputs available at low cost to the farmer, security of tenure, credit facilities, and encouragement and instruction through extension services.

18. Prime Minister Bandaranaike has as yet made no changes in the government's policies toward rice farmers. Soon after her election in the spring of 1970, she indicated that she intends to continue her predecessor's policies in this area. She also indicated that she welcomed a continuation of foreign aid, which has supplied much of the fertilizer, pesticides, and herbicides needed by the rice farmers. During the election campaign, Mrs. Bandaranaike's coalition charged that the Mahaveli Ganga irrigation project constituted a "sellout" to the World Bank, and her party platform pledged to "reconsider" certain provisions of the agreement. Because of the importance of this project to rice production in the dry zone, however, the new government is unlikely to terminate the contract, although some changes in the terms of the agreement may be requested.

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19. Ceylon's success in raising rice production is not likely to have much of an effect on its rice-rubber barter agreement with Communist China. Under the agreement, in force since 1952, Ceylon exports rubber to China at premium prices, in exchange for rice at below world market prices. Rice from China could be substituted for wheat which is now imported under concessionary terms from Western countries. Moreover, it is possible that Chinese textiles or some other manufactures that Ceylon now buys with hard currency could be substituted for rice.

**Conclusions**

20. Through its rice subsidy program, Ceylon has successfully increased rice production to a point where self-sufficiency may now be realized by the mid-1970s. This program -- high support prices paid to farmers and a subsidized rice ration program for consumers -- is consistent with the government's import substitution and social welfare goals. Moreover, savings of foreign exchange realized on the declining import requirements for rice have had a favorable impact on Ceylon's balance-of-payments position. Mrs. Bandaranaike may increase the consumer subsidy, perhaps to the level prevailing during her previous administration (1960-65). She is unlikely, however, to reduce the existing incentives to rice farmers.

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Table 1

Ceylon: Rice Production, Acreage,  
and Yields

<u>Year</u>	<u>Production (Thousand Long Tons)</u>	<u>Acreage (Thousand Acres)</u>	<u>Yield (Pounds per Acre)</u>
1951	452	846.1	1,196
1952	593	939.0	1,417
1953	450	811.0	1,242
1954	639	1,025.0	1,394
1955	733	1,099.0	1,495
1956	565	917.0	1,380
1957	643	966.0	1,490
1958	752	1,063.0	1,582
1959	747	1,034.0	1,619
1960	883	1,184.0	1,670
1961	885	1,195.8	1,656
1962	986	1,268.5	1,739
1963	1,010	1,296.6	1,743
1964	1,037	1,304.5	1,780
1965	745	1,056.2	1,582
1966	938	1,283.8	1,638
1967	1,132	1,330.8	1,904
1968	1,306	1,432.4	2,042
1969	1,355	1,374.9	2,208

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Table 2

## Ceylon: Rice Area Irrigated

	<u>Thousand Acres</u>		<u>Percentage Increase</u>
	<u>1951</u>	<u>1967</u>	
<i>Total rice area a/</i>	993	1,568	58
Irrigated:			
<i>Maha</i>	223	583	161
<i>Yala</i>	223	343	54
Rainfed:			
<i>Maha</i>	359	424	18
<i>Yala</i>	188	218	16

*a. Harvested area, with double-cropped area counted twice.*

Table 3

## Ceylon: Size of Paddy Holdings

	<u>Thousand Acres</u>		<u>Percent of Total</u>	
	<u>1946</u>	<u>1962</u>	<u>1946</u>	<u>1962</u>
Less than 1 acre	205	25	23	2
1 to 5 acres	426	447	47	40
5 to 10 acres	122	378	14	33
Over 10 acres	147	284	16	25
<i>Total</i>	900	1,134	100	100

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## CEYLON LAND USE

